REMARKS

This Amendment, submitted in response to the Office Action dated October 23, 2003, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

As a preliminary matter, claim 1 was amended for antecedent basis issues. No new matter has been added. Claims 5 and 6 have been amended to depend on claim 1.

As a further preliminary matter, Applicant respectfully requests that Huykman be added to the Notice of References cited.

Applicant has added claim 8 to further define the control of the first control circuit between a first limit of the duty cycle and a second limit of the duty cycle and has added claim 9 to further describe the duty cycle of the first power stage. Claims 8 and 9 should be deemed patentable by virtue of their dependency to claim 1, for the reasons set forth below.

Claims 1-9 are now pending in the present application. Claims 1-3 have been rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by Mammano et al (USP 5,422,562). Claims 1-7 have been rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by Hwang (USP 5,565,761). Claims 1-7 have been rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by Cuk et al (USP 5,815,380) or Summer (USP 5,282,122). Claim 1 has been rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by Brown et al. (USP 5,483,436) or Huykman (USP 5,394,076). Applicant submits the following in traversal of the rejections.

Rejection of claims 1-3 under § 102(b) as being allegedly anticipated by Mammano

The Examiner asserts that Mammano allegedly discloses the claimed invention, including a switched power supply converter for a broad range of input values.

Mammano teaches a power converter having a single power stage 12 and a load compensation circuit 40 coupled to a load and an output terminal 20 of the power stage 12 (col. 1, lines 53-61; col. 3, lines 53-57; col. 4, lines 22-24; figures 1, 2, 5, 6 and 7). The single power stage 12 includes a PWM for controlling the duty cycle of a switch 14 in order to maintain the output voltage substantially constant at a predetermined nominal level, col. 4, lines 14-16. When the output voltage falls outside a predetermined range, defined by VL and VH predetermined levels, the load compensation circuit supplies or diverts current away from the load (col. 5, lines 22-32; claim 1).

Claim 1 recites a cascade connection of two power stages, such that the first control circuit 11-9 maintains the duty cycle of the switch 11-3 to a first duty cycle level or second duty cycle level, based on the input voltage level (see page 4, lines 10-27 of the instant application). If the input voltage level falls outside an input voltage range defined by a first and a second predetermined levels, the duty cycle of the switch 11-3 will remain constant, i.e., the duty cycle is equal to the first or second duty cycle level depending on whether the input voltage falls outside a predetermined input voltage range.

Mammano teaches a one power stage and the duty cycle of the power stage is varied based on the output voltage. In contrast, claim 1 recites two-stage cascade power and the duty cycle remains constant when the input voltage falls outside a predetermined range of input voltage.

Furthermore, in the present invention, the duty cycle of the first power stage is independent of the output voltage supplied to the load (page 4, lines 24 of the instant application). The first power stage of the present invention does not measure the output voltage. However, the compensation circuit of Mammano needs to measure the output voltage to assess whether the output voltage is within or outside the predetermined output voltage range. For example, the load compensation circuit 40 described by Mammano lacks switching transistors, and therefore, the compensation circuit does not need to generate a duty cycle.

In sum, there is no teaching or suggestion in Mammano that the duty cycle of the first power stage remain constant at a first or second predetermined duty cycle, depending on whether the input voltage is greater or less than a predetermined voltage range.

For the above reasons, claim 1 and its dependent claims are allowable.

Rejection of claims 1-7 under § 102(b) as being allegedly anticipated by Hwang

The Examiner states that Hwang allegedly discloses a switched power supply converter for a broad range of input voltages.

Hwang teaches a two-stage cascade power converter wherein the duty cycle of the first power stage is varied according to the input voltage in order to maintain a constant output voltage (col. 5, lines 32-33, claim 1), such that the amplitude of the current waveform will follow the amplitude off the voltage waveform, that is, power factor correction technique.

Hwang does not disclose the operation of the first power stage when the input voltage falls outside a predetermined voltage range. Therefore, Hwang does not suggest the duty cycle of the first power stage remaining constant when the input voltage falls outside a predetermined voltage range.

Hwang varies the duty cycle of the power stage to maintain the output voltage constant. In contrast, in the invention recited in claim 1, the duty cycle is set to a first or second duty cycle value when the input voltage falls outside of a predetermined range of input voltage.

In sum, there is no teaching or suggestion in Hwang that the duty cycle of the first power stage remains constant at a first or second predetermined duty cycle, depending on whether the input voltage is greater or less than a predetermined voltage range. Therefore, claim 1 and its dependent claims are allowable.

Rejection of claims 1-7 under § 102(b) as being allegedly anticipated by Cuk or Summer

The Examiner states that Cuk allegedly discloses the claimed invention.

In Cuk, the auxiliary switch is driven for obtaining a regulated voltage at the output of the second conversion stage. Cuk lacks any disclosure about whether or not the duty cycle remains constant when the input voltage falls outside an input range voltage. On the contrary, equation 2 (col. 7, line 63) implies that the duty cycle does not remain constant. At most, Cuk describes terminating a current source at an instant prescribed by a fixed clock frequency or a fixed internal reference voltage. See column 8, lines 19-30.

In sum, there is no teaching or suggestion in Cuk that the duty cycle of the first power stage remains constant at a first or second predetermined duty cycle, depending on whether the input voltage is greater or less than a predetermined voltage range. Therefore, claim 1 and its dependent claims are allowable.

The Examiner states that Fig. 1 of Summer allegedly discloses the claimed subject matter.

In Fig. 1 of Summer, there is a single power stage. Furthermore, there is no teaching or suggestion that there are changes in the duty cycle based on an input voltage, e.g., when the input voltage falls outside a predetermined range of the input voltage.

In sum, there is no teaching or suggestion in Summer that the duty cycle of the first power stage remains constant at a first or second predetermined duty cycle, depending on whether the input voltage is greater or less than a predetermined voltage range. Therefore, claim 1 and its dependent claims are allowable.

Rejection of claim 1 under § 102(b) as being allegedly anticipated by Brown or Huykman

The Examiner states that Fig. 2 of Brown allegedly discloses the claimed subject matter.

Fig. 2 of Brown shows a two power stage converter. However, Brown at col. 2, lines 10-60, is silent about the operation of the duty cycle of the first power stage when the input voltage falls outside a predetermined range input voltage. In particular, the system of Brown is used in an electric traction motor power, such that the input voltage is provided by a battery, (col. 3, line 67- col. 4, line 4). Therefore, this type of voltage source never provides input voltage falling outside the voltage range of the battery. See column 3, lines 50-53.

In sum, there is no teaching or suggestion in Brown that fixing the duty cycle of the main switch to the duty cycle associated to an end of the input voltage range when the input voltage falls outside the input voltage range as described in the present invention. Therefore, claim 1 and its dependent claims are allowable.

The Examiner states that Fig. 1 of Huykman allegedly discloses the claimed subject matter.

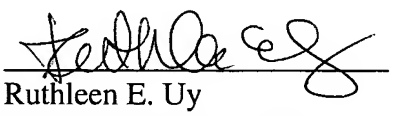
Huykman suffers from the same deficiency as Summer. Fig. 1 of Huykman illustrates a single power stage. Furthermore, Huykman lacks and disclosure with regard to duty cycle. In particular, there is no indication whether there are changes in the duty cycle based on an input voltage, e.g. when the input voltage falls outside a predetermined range of the input voltage.

In sum, there is no teaching or suggestion in Huykman that the duty cycle of the first power stage remains constant at a first or second predetermined duty cycle, depending on whether the input voltage is greater or less than a predetermined voltage range. Therefore, claim 1 and its dependent claims are allowable.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Ruthleen E. Uy
Registration No. 51,361

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: February 23, 2004